

# CPH2-L Spec-sheet



## Industrial LoRaWAN® Operated Low Power pH, ORP and Temperature Sensor

- Compatible with all LoRaWAN® frequencies
- Wide range of industrial applications
- High accuracy
- Designed to meet outdoor applications
- Long-term durable performance in harsh environment
- Ultra-low power
- Pre-configured with no need of programming or hardware setting



## TECHNICAL SPECIFICATION

### pH Sensor

• Measurement Range	~ 2 - ~12	pH
• Accuracy	± 0.1	pH
• Resolution	0.01	pH

### ORP Sensor

• Measurement Principle	Combined electrode (ORP/reference) Platinum tip, Ag/AgCl AgAgCl. Gelled reference (KCl)	
• Measurement Range	-1000 to +1000	mV
• Resolution	0.1	mV
• Accuracy	± 2	mV

### Temperature Sensor

• Measurement Principle	NTC	
• Measurement Range	0 to +50	°C
• Resolution	0.01	°C
• Accuracy	± 0.5	°C
• Storage Temperature	0 to +50	°C

### Power

• Power Supply	Built-in Replaceable Lithium Battery, External Power (option)	
• Rated Voltage	3.6	V
• Battery Lifetime	Typ. 20,000+ readings / 10,000+ transmission (connected to ellenex platform and standard network quality)	

### Physical

• Materials	Sensor Head: PVC, DELRIN, special pH glass, platinum, Polyamide, cable: Coaxial armored polyurethane, Enclosure: POM	
• Max Pressure on Sensor Head	5bar	
• Weight	~900 (for 3m cable)	g
• Protection Rate	IP68 for sensor head and IP66 or IP68 and UV Protected enclosure	

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## Communication

• LoRaWAN® Version, Class	1.0.2revB, Class A (Class C on request)
• LoRaWAN® Frequency Zone	AS923, EU868, US902-928, AU915-928 (other zones available on request)
• LoRaWAN® Activation Type	OTA (default), ABP
• Sampling Type	Periodic (default), Event triggered
• Sampling Period	Configurable via downlink (default 4 hours)
• Transmission Type	Per sample (default), Event triggered, Conditional
• Parameter Configuration	Over-the-air via LoRaWAN® downlinks Locally via wireless connectivity
• Firmware Update	Locally via Wireless Connectivity, Over The Air

## NETWORK CONNECTION AND VISUALISATION

### Network Integration

- Pre-configured to ellenex LNS or configurable to all main network servers (AWS, Netmore, ChirpStack, Helium, Kerlink, Kona Tektelic, Lorient, machine-Q, Orange, Orbiwise, Proximus, Swisscom, TATA, The Things Network (TTN), TTI and any other network)

### Visualization And Data Management

- Ellenex white label microservice platform, and Integratable to all main IIoT platforms directly or through the api (AWS, Azure, PTC ThingWorx, Bosch IoT, Cisco Jasper & Kinetic, Sierra Numerex, MathWorks, ThingSpeak, GE Digital Predix, LandisGyr, Siemens MindSphere, Cumulocity, myDevices, Ubidots, TagIO, HPE IoT and any other major IoT platform).

### Ellenex Platform Main Features

- Encrypted ultra-low power communication protocol
- Advanced device inventory
- Integration APIs for enterprise systems
- Multi-tenant role-based access control
- Data export and import
- White-label platform for enterprise runs on private account
- Variable alarm setting for high and low thresholds and multi-channel alerting
- Sampling and transmission interval configuration
- Transmission condition configuration
- Other configurations and customization available on request



Encrypted & ultra-low power



Integratable



Dynamic alerting



Multi-tenant




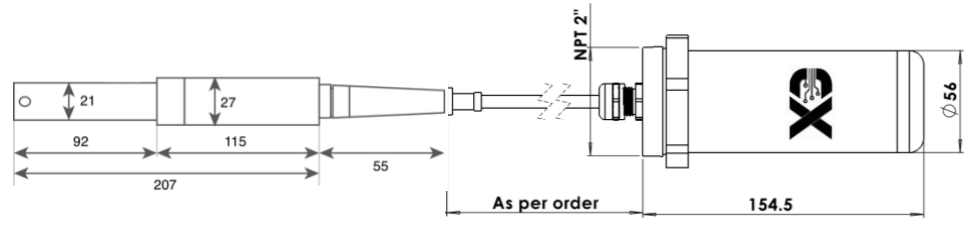

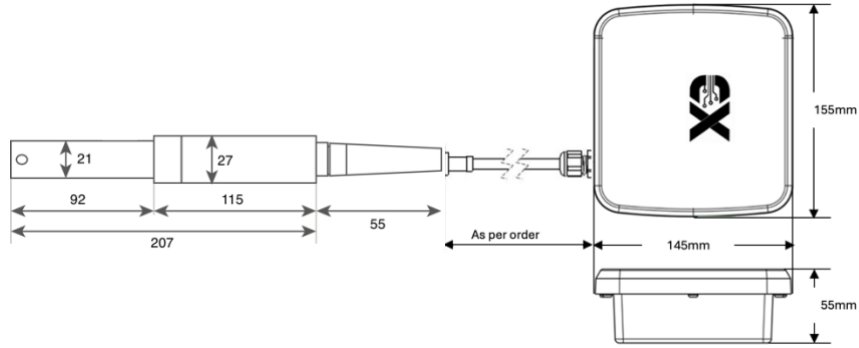
Scalable



Composable & API first

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## MODEL GUIDE

Model	Drawing:
<p>C Model:</p> 	 <p style="text-align: center;"> <b>IP68 sensor head, connected to POM enclosure</b>  <b>IP68 enclosure: with cable gland, without on/off switch, and with internal antenna</b>  <b>IP66 enclosure: with sensor connector, on/off switch, and external antenna</b> </p>
<p>E Model:</p> 	 <p style="text-align: center;"> <b>IP68 sensor head, connected to IP65 ASA enclosure with on/off switch</b> </p>

## INDUSTRIES



Water & Wastewater



Agriculture & Farming



Oil & Gas



Marine & Oceanography



Mining & Construction



Environmental Monitoring

## APPLICATIONS

- Bore Hole Mineral Level
- Water Resources
- Surface Water, Rivers and Catchments
- Sea Water
- Wastewater Tank
- Industrial Wastewater
- Regulatory Automated Reporting
- Drinking Water

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## ORDERING CODE

CPH2-L									
LoRaWAN Frequency Zone									
AS (AS923)			AUx (AU915-928) <small>(Sub Band x)</small>		EU (EU868)		USx (US902-928) <small>(Sub Band x)</small>		
LoRaWAN Activation									
A (Over The Air Activation - OTAA)					P (Activation By Personalization - ABP)				
Measurement Range									
S: pH: ~ 2 - ~12, ORP: -1000 to +1000, Temp: 0 - +50°C									
Enclosure									
C5: Cylindrical					E5: Rectangular				
Cable Length									
S: 3m							Other options available on request		
Device Activation									
S: With On/Off Switch					X: No Switch <small>(Always On)</small>				
Antenna Option									
E: External					I: Internal				
Options <small>(On request)<sup>1</sup></small>									
CPH2-L	AS	A	S	C5	S	S	E		

### Sample Product Code:

- **CPH2-L-AS-A-S-C5-S-S-E**

LoRaWAN pH sensor, frequency of AS923, Over The Air Activated, measurement range of 2-12, In cylindrical enclosure, standard cable length, with on/off switch and external antenna.

### <sup>1)</sup> Product Options:

- **EPB:** sensor with external power supply connector for 12V supply with internal battery backup (only for E type enclosure, adaptor is not included)
- **HG:** high-gain external antenna
- **HCB:** high-capacity battery (only for E type enclosure)

